REMARKS

Applicant wishes to thank the Examiner for reviewing the present application.

Claim Amendments

Claim 1 was amended to correct typographical errors and text has been rearranged for clarity. Claim 20 was amended to correct grammar in the preamble and various typographical errors throughout. Claims 2, 17, 21, 30 and 33-37 were amended to correct typographical errors.

Applicant submits that no new matter has been added.

Claim Rejections

Claims 1-39 were rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,787,889 to Edwards in view of U.S. Patent No. 6,002,738 to Cabral. Applicant respectfully traverses the rejection.

The present invention is directed towards an improved system and method for generating a 2-D image projection from 3-D volume data. Claim 1 recites a method for generating a 2-D image projection and includes the following step of:

> c) re-sampling a selected set of the viewing vectors in the volume data with a refined grid according to a selected image parameter, the re-sampling in a direction of said major axis, the image parameter being selected so as to provide each vector of the selected set of viewing vectors with the same major axis as the direction vector;

As outlined above, upon determining a major axis of the viewing direction vector, the selected viewing vectors are re-sampled with a refined grid. This is done according to a selected image parameter that provides each viewing vector with a major axis that is the same as the major axis of the direction vector. Since all the vectors have the same major axis, they are rendered, during step d), with the same factorization. Thus, the image displayed does not have

the visual defects that may arise if the image is rendered with multiple factorizations and then patched together. Moreover, the image is rendered faster than if multiple factorizations are used. (see page 9, lines 11-15 of the present application).

Claim 20 is directed towards a system which provides the above described re-sampling to enable a single factorization, and claim 30 is directed to a computer program product also having similar features.

Edwards teaches an image visualization and reconstruction for ultrasound imaging. The Examiner has relied on several random passages throughout Edwards and has taken the position that Edwards teaches all steps outlined above minus the provision of a viewing frustum. Edwards describes an image visualization process beginning at column 14, line 65 and continuing to column 19, line 20.

Particularly at column 15 lines 7-20, Edwards states that the image visualization process derives 2-D image projections of the 3-D volume over time to generate a rotating image at successive viewing angles. Edwards then explains that for each change in viewing angle, the process factorizes the necessary viewing transformation matrix into a 3D shear, which is parallel to slices of the volume data. These viewing angles are also referred to as viewing directions and are shown in Figure 8. Therefore, even if one were to take the Examiner's approach and equate Edwards' viewing angles to the viewing vectors recited in claim 1, multiple factorizations would still be performed, which is contrary to what has been claimed.

The Examiner has equated step c) above with column 15, lines 38-46 of Edwards. At column 15, lines 38-46 Edwards explains that the slices are re-sampled, not a set of viewing vectors. Clearly Edwards does not teach step c) but performs an entirely different re-sampling step on entirely different data.

Applicant believes that the Examiner has misconstrued the teachings of Edwards. Edwards does not teach re-sampling a set of viewing vectors with a refined grid according to a selected parameter in order to provide each vector with the same major axis as the direction vector. In fact, Edwards does not even teach re-sampling a vector, let alone with a refined grid. Further, Edwards' process does not provide a set of vectors with the same major axis as a direction vector. Edwards is entirely silent in that regard.

Cabral teaches volume rendering using texture mapping. The Examiner cites column 19

lines 13-22 of Cabral which merely states *inter alia* "...in addition to the six viewing frustum clipping planes." Although Cabral refers to a viewing frustum, Cabral does not teach what is missing from Edwards, namely the step of re-sampling a selected set of vectors with a refined grid as outlined above (step c)). Therefore, Cabral does not teach what is missing from the teachings of Edwards, and the combination thereof would not even teach all the steps claimed.

Clearly, neither Edwards nor Cabral teach re-sampling a selected set of viewing vectors as recited in step c) of claim 1. Therefore, Applicant submits that neither Edwards nor Cabral, alone or in combination, teach the method recited in claim 1, and as such claim 1 clearly and patentably distinguishes over the combination of Edwards and Cabral and is in condition for allowance.

Claims 2-19 are either directly or indirectly dependent on claim 1, and as such, are also believed to distinguish over the combination of Edwards and Cabral.

Claim 20 is directed to a system of similar scope to claim 1. Therefore, claim 20 is also believed to distinguish over the combination of prior art.

Claims 21-29 are either directly or indirectly dependent on claim 20, and as such, are also believed to distinguish over the combination of Edwards and Cabral.

Claim 30 is directed to a computer program product of similar scope to claim 1. Therefore, claim 30 is also believed to distinguish over the combination of prior art.

Claims 31-39 are either directly or indirectly dependent on claim 30, and as such, are also believed to distinguish over the combination of Edwards and Cabral.

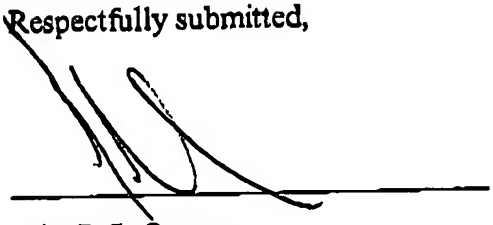
Summary

Applicant respectfully submits that claims 1-39 clearly and patentably distinguish over the combination of Edwards and Cabral, and are in condition for allowance.

Appl. No. 10/792,126
Amdt. Dated: July 28, 2005
Reply to Office Action of: April 29, 2005

Applicant requests early reconsideration and allowance of the present application.

Respectfully submitted,



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Date: July 28, 2005

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